a power supply which flows currents with a phase difference in said plurality of conducting paths; and

a magnetic field generator which forms a magnetic field perpendicular to said conducting paths;

wherein said movable member revolves due to an electromagnetic force generated by an interaction between a current flowing in said conducting paths, and a magnetic field generated by said magnetic field generator.

2. (Amended) The revolution type actuator according to claim 1,

wherein the plurality of conducting paths is equal to two, which intersect with each other at an angle of about 90°; and

currents flowing through said two conducting paths have a phase difference of about 90° therebetween.

3. (Amended) The revolution type actuator according to claim 1, wherein one of the plurality of conducting paths is formed on a printed circuit board.

4. The revolution type actuator according to claim 1, wherein the magnetic field generator includes a magnet, and an outer case made of a magnetic substance for forming an enclosed magnetic path in which magnetic flux occurring from said magnet passes.

5. The revolution type actuator according to claim 1, further comprising a rotation constraining mechanism for holding the movable member on the fixed member in a rotary manner via an eccentric shaft to thereby constrain said movable member from rotating.

6. (Amended) The revolution type actuator according to claim 1, wherein:

the magnetic field generator includes a magnet and a stator, which is magnetized by magnetic flux generated by said magnet; and

the movable member is provided with a conductor which is arranged opposite a magnetic pole of said magnet, in a plane perpendicular to the magnetic flux generated between

said magnet and said stator, to thereby form one of the plurality of conducting paths, the moveable member thus revolving due to an electromagnetic force generated by an interaction between a current flowing through said conductor and a magnetic field formed by said magnetic flux.

7. The revolution type actuator according to claim 6, wherein the movable member is entirely or partially made of a magnetic substance.

8. The revolution type actuator according to claim 7, wherein the stator approaches steadily facing to a magnetic substance of the movable member, and has a magnetized face which is perpendicular to said revolving trajectory face.

9. (Amended) The revolution type actuator according to claim 6, wherein the magnet has N- and S-poles on inner and outer peripheries respectively, which are on one face opposite the movable member, to thereby form a magnetic circuit in which magnetic flux starting from one of said poles enters the stator, thus preventing magnetic flux from leaking to an external space from a face opposite to the face having both of said poles of said magnet.

10. (Amended) The revolution type actuator according to claim 6,

wherein a magnetic substance is arranged on a pole face of the magnet opposite the movable member and the conductor; and

said magnetic substance has a face thereof opposite said conductor, formed larger in area than a largest revolving region of said conductor and smaller than the pole face, and a face thereof opposite the magnet formed almost as large as said pole face.

11. (Amended) The revolution type actuator according to claim 1, wherein:

the movable member is entirely or partially made of a magnet;

the magnetic field generator includes said magnet and a stator which is magnetized by magnetic flux generated by said magnet;

one of the pluralities of conducting paths is arranged on a side of the stator opposite a pole of said magnet of said movable member; and

said movable member is arranged in a plane perpendicular to magnetic flux running between said magnet and said stator, thus revolving due to an electromagnetic force generated by an interaction between a current flowing in the one of the pluralities of conducting paths and a magnetic field generated by said magnetic flux.

12. The revolution type actuator according to claim 6, wherein a spring is interposed between the movable member and the stator.

13. The revolution type actuator according to claim 12, wherein the spring is provided with a bearing at a tip thereof on the side of the movable member.

14. (Amended) The revolution type actuator according to claim 1, wherein the plurality of conducting paths are made of a face-shaped conductor.

15. The revolution type actuator according to claim 14,

wherein the face-shaped conductor is provided with a plurality of electrodes; and

the direction of a current flowing through said face-shaped conductor is controlled by sequentially changing said current flowing electrodes.

16. (Amended) The revolution type actuator according to claim 1,

wherein the plurality of conducting paths are comprised of a plurality of sheets of face-shaped conductors which are stacked one on another with insulation maintained therebetween and which are provided with electrodes so as to flow current in different directions; and

wherein said current flowing electrodes can be sequentially changed to thereby control a current flowing through each of said conducting paths, so that the directional electromagnetic force generated by an interaction between said current and said magnetic field may provide a circular motion time-wise.

17. (Amended) The revolution type actuator according to claim 1, wherein:

the actuator has a configuration of a scroll pump, the movable member is held on said fixed member in a revolutionary manner via an eccentric shaft, andsaid actuator further comprises:

a movable scroll having spiral blades provided to said movable member;

a fixed scroll having spiral blades provided to said fixed member;

said spiral blades of said movable and fixed scrolls combined with each other; and

wherein said movable scroll is revolved around said eccentric shaft with a predetermined radius to thereby shift an enclosed space formed by said spiral blades of both of said scrolls from the outside toward the center, thus consecutively reducing the volume of said enclosed space.

18. (Amended) The revolution type actuator according to claim 1, wherein:

the actuator has a configuration of a scroll pump,

the movable member is a first moveable member;

the actuator further comprises a second moveable member the first and second movable members each held to said fixed member in a revolutionary manner via an eccentric shaft;

said first and second movable members are each provided with a movable scroll having spiral blades;

said spiral blades of said movable scrolls are combined with each other; and

said movable scrolls are revolved mutually oppositely with a predetermined radius around said eccentric shaft to thereby shift enclosed space formed by said spiral blades of said movable scrolls from the outside toward the center, thus consecutively reducing the volume of said enclosed space.

19. (Amended) A revolution type actuator, comprising:

a conducting member having a plurality of conducting paths by which currents flow in mutually intersecting directions;

a power supply which flows currents with a phase difference in the plurality of conducting paths; and

a magnetic field generator which forms a magnetic field perpendicular to a conducting face formed by said conducting paths,

wherein either one of the conducting member or the magnetic field generator revolves due to an electromagnetic force generated by an interaction between a current flowing in the conducting path and a magnetic field generated by the magnetic field generator.

Please add claim 20:

20. (New) A revolution type actuator having a movable member performing a revolution motion, comprising:

a movable member that can move with a revolution motion with respect to a fixed member;

a plurality of conducting paths which are on a face parallel to a trajectory face of said revolution motion and by which AC currents flow in intersecting directions with a mutually phase difference in accordance with an angle at which the conducting paths intersect each other;

a power supply which flows currents with a phase difference in said plurality of conducting paths; and

a magnetic field generator which forms a magnetic field perpendicular to said conducting paths;

wherein said movable member moves with a revolution motion due to an electromagnetic force generated by an interaction between a current flowing in said conducting paths, and a magnetic field generated by said magnetic field generator.

REMARKS

Claims 1-20 will be pending upon entry of the present amendment. Claims 1-3, 6, 9-11, 14, and 16-19 are amended, claim 20 is new.